

Oracle® VM

Release Notes

Release 3.0.2 for x86

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This document contains information on Oracle VM Release 3.0.2 and supersedes the product documentation. This document contains last-minute information that could not be included in the Oracle VM documentation. Read this document before installing Oracle VM. This document may be updated after it is released. To check for updates to this document, and to view other Oracle documentation, refer to the Documentation section on the Oracle Technology Network (OTN) Web site:

<http://www.oracle.com/technology/documentation/>

This document is intended for users, and administrators of Oracle VM. It includes a brief introduction of the product, and describes potential issues and the corresponding workarounds you may encounter while using Oracle VM.

Oracle recommends that you read this document before installing and using Oracle VM.

This document includes the following topics:

- [Introduction](#)
- [Supported Guest Operating Systems](#)
- [Configuration Limits](#)
- [Known Limitations and Workarounds](#)
- [Upgrading Oracle VM](#)
- [Documentation Accessibility](#)

1 Introduction

Oracle VM is a platform that provides a fully equipped environment for better leveraging the benefits of virtualization technology. Oracle VM enables you to deploy operating systems and application software within a supported virtualization environment. The components of Oracle VM are:

- Oracle VM Server for x86
- Oracle VM Manager

Oracle VM Server for x86 (Oracle VM Server) is a self-contained virtualization environment designed to provide a lightweight, secure, server-based platform to run virtual machines. Oracle VM Server is based upon an updated version of the underlying Xen hypervisor technology, and includes Oracle VM Agent. It also includes a Linux kernel with support for a broad array of devices, file systems, and software RAID volume management. The Linux kernel is run as dom0 to manage one or more

domU virtual machines, each of which could be Linux, Oracle Solaris, or Microsoft Windows.

Oracle VM Manager is a server-based user interface, which is a standard Application Development Framework (ADF) web application to manage Oracle VM Servers. Oracle VM Manager provides virtual machine life cycle management, including creating virtual machines from installation media or from templates. It provides features such as power on, power off, deleting, importing, deploying, and live migration of virtual machines. Oracle VM Manager also effectively manages resources, including ISO files, virtual machine templates, and shared virtual disks.

This document contains last-minute release information about Oracle VM.

2 Supported Guest Operating Systems

The guest virtual machines you create must be one of the following supported configurations.

Table 1 64-bit CPU Hardware Virtualized Supported Guest Operating Systems (Linux and Solaris)

Guest Operating System	Hardware Virtualized 32-bit	Hardware Virtualized 32-bit with PV Drivers	Hardware Virtualized 64-bit	Hardware Virtualized 64-bit with PV Drivers
Oracle Linux Release 6.x	Yes	Yes	Yes	Yes
Oracle Linux Release 5.x	Yes	Yes	Yes	Yes
Oracle Linux Release 4.x	Yes	Yes	Yes	Yes
Oracle Solaris 11 Express ¹	N/A	Yes	N/A	Yes
Oracle Solaris 10 ¹	N/A	Yes	N/A	Yes
RedHat Enterprise Linux 5.x	Yes	Yes	Yes	Yes
RedHat Enterprise Linux 4.x	Yes	Yes	Yes	Yes

¹ Oracle Solaris support begins with Solaris 10 10/09. The Solaris 10 or Solaris 11 Express OS runs as a hardware virtual machine (HVM), which requires HVM support (Intel VT or AMD-V) on the underlying hardware platform. By default, Solaris 10 or Solaris 11 Express OS already has the required paravirtualized (PV) drivers installed as part of the OS. Oracle Solaris 10 or Solaris 11 Express supports x86 32-bit and 64-bit architecture. 32-bit or 64-bit mode is selected at OS boot time by examining the hypervisor and the underlying hardware.

Table 2 64-bit CPU Hardware Virtualized Supported Guest Operating Systems (Microsoft Windows)

Guest Operating System	Hardware Virtualized 32-bit	Hardware Virtualized 32-bit with PV Drivers 2.x	Hardware Virtualized 64-bit	Hardware Virtualized 64-bit with PV Drivers 2.x
Microsoft Windows™ 7 SP1	Yes ¹	Yes	Yes ¹	Yes
Microsoft Windows™ Vista SP2	Yes ¹	Yes	Yes ¹	Yes
Microsoft Windows™ XP SP3	Yes ¹	Yes	Yes ¹	Yes
Microsoft Windows™ Server 2008 R2 SP1	N/A	N/A	Yes ¹	Yes

Table 2 (Cont.) 64-bit CPU Hardware Virtualized Supported Guest Operating Systems (Microsoft Windows)

Guest Operating System	Hardware Virtualized 32-bit	Hardware Virtualized 32-bit with PV Drivers 2.x	Hardware Virtualized 64-bit	Hardware Virtualized 64-bit with PV Drivers 2.x
Microsoft Windows™ Server 2008 SP1	Yes ¹	Yes	Yes ¹	Yes
Microsoft Windows™ Server 2003 R2 SP2	Yes ¹	Yes	Yes ¹	Yes
Microsoft Windows™ Server 2003 SP2	Yes ¹	Yes	Yes ¹	Yes

¹ HVM-only mode is used to facilitate the Windows PV Drivers installation. Windows PV Drivers are required on the Windows OS if available in order to be supported as a guest OS.

Table 3 64-bit CPU Paravirtualized Supported Guest Operating Systems

Guest Operating System	Paravirtualized 32-bit	Paravirtualized 64-bit
Oracle Linux Release 6.x	Yes	Yes
Oracle Linux Release 5.x	Yes	Yes
Oracle Linux Release 4.x	Yes	Yes
RedHat Enterprise Linux 6.x	Yes	Yes
RedHat Enterprise Linux 5.x	Yes	Yes
RedHat Enterprise Linux 4.x	Yes	Yes

Table 4 Support Matrix of Windows PV Drivers on Oracle VM Releases

Oracle VM Release	Windows PV 2.0.7
Oracle VM Server 3.0.1	Yes

3 Configuration Limits

This section contains the configuration maximums for Oracle VM. The limits presented in the following tables represent tested, recommended limits, and are fully supported by Oracle. The configuration limits are categorized as:

- [Virtual machine maximums](#)
- [Oracle VM Server maximums](#)
- [Server pool and cluster maximums](#)
- [Storage maximums](#)
- [Network maximums](#)

Table 5 Virtual machine maximums

Item	Maximum
Virtual CPUs	128
Virtual RAM on x86 (32-bit) guests	63 GB
Virtual RAM on x86_64 (64-bit) guests	1 TB
Paravirtualized Guests	

Table 5 (Cont.) Virtual machine maximums

Item	Maximum
Virtual NICs	31
Virtual disks	52
Hardware Virtualized Guests	
Virtual NICs	8
IDE disks (including CDROM and virtual disks)	4
SCSI disks	7

Table 6 Oracle VM Server maximums

Item	Maximum
CPUs	160
RAM	2 TB
Virtual Machines	128

Table 7 Server pool and cluster maximums

Item	Maximum
Oracle VM Servers in a server pool	32

Table 8 Storage maximums

Item	Maximum
LUNs in a storage array	1,000
OCFS2 volume size	64 TB
Files per OCFS2 volume	30,000
Virtual disk	10 TB
Virtual IDE drives per device	4

Table 9 Network maximums

Item	Maximum
NICs ports per network bond	2
Network bonds per Oracle VM Server	5

4 Known Limitations and Workarounds

This section contains information on the known limitations and workarounds for Oracle VM and contains the sections:

- [Oracle VM Servers and Server Pools](#)
- [Virtual Machines](#)
- [Networks](#)

- [Storage](#)

4.1 Oracle VM Servers and Server Pools

This section contains the known issues and workarounds related to Oracle VM Servers and server pools.

4.1.1 BIOS Settings

Pay special attention to the following settings in the BIOS of your Oracle VM Servers:

- AHCI mode may be necessary to recognize the CDROM device to perform an installation from CDROM.
- Disable I/O MMU Virtualization Settings; for Intel-based servers this is *VT-d*; for AMD based servers this is *AMD-Vi* or *IOMMU*. I/O MMU is not supported in this release.

4.1.2 Oracle VM Agent Password Must Be Identical for All Oracle VM Servers

Make sure that all Oracle VM Servers in a server pool have been set up with the same Oracle VM Agent password. Failure to do so will prevent Oracle VM Manager from properly addressing servers and launching operations. You set the password of the Oracle VM Agent during the installation procedure of Oracle VM Server. To change the Oracle VM Agent password, use the `ovs-agent-passwd` utility on the Oracle VM Server.

4.1.3 Servers in a Server Pool Should Have the Same CPUs

The Oracle VM Servers in a server pool should have CPUs in the same CPU family and be the same CPU type. If they are not, some operations such as live migration will fail. Though the CPUs should be in the same CPU family and be of the same type, they may have differing configurations, such as different number of cores, or amount of memory. It is recommended that the Oracle VM Servers in a server pool are identical.

Oracle VM Manager contains rules for processor compatibility groups. If live migration is attempted between incompatible processors, an error message is displayed.

4.1.4 Live Migration Must be in Same Server Pool

Oracle VM Manager does not permit cross-Server Pool migration. Users can only migrate a virtual machine from one Virtual Machine Server to another within the same Server Pool, provided these two servers have the same CPU architecture.

4.1.5 Network Interfaced in PXE Kickstart File

When using a PXE boot kickstart file to perform an Oracle VM Server installation, make sure you specify the network interface to be used for the management interface first. If you have more than one network interfaces specified in a kickstart file, the first interface is used as the management interface. The management interface is the only *live* interface after a PXE install of Oracle VM Server. You should manually configure any other network interfaces on the Oracle VM Server to start on boot in the `/etc/sysconfig/network-scripts/ifcfg-*` files. Set the `ONBOOT=NO` parameter to `ONBOOT=YES`.

4.1.6 Dom0 Memory May Need Increasing

Oracle VM has a default dom0 memory size of 512M. However, there are cases where it is necessary to increase this size to meet the demand of running applications. For example: presenting one iSCSI LUN takes approximately 3.5M of system memory. Consequently, a system that uses many LUNs will quickly require a larger amount of memory in accordance with the storage configuration.

Workaround: change the dom0 memory. Edit the file `/boot/grub/menu.lst`, and change the kernel command line entry `dom0_mem=512M` to the desired value, then save and reboot.

4.1.7 Oracle VM Server Installation on Sun Fire X4800

If you are installing Oracle VM Server on a Sun Fire X4800, you must provide extra parameters when booting from the installation media (CDROM or ISO file), or when using a kickstart installation. These parameters allow the megaraid_sas driver to load correctly.

If booting from the installation media, press F2 when the initial boot screen is displayed and provide the following additional parameters as part of the boot command:

```
mboot.c32 xen.gz extra_guest_irqs=64,2048 nr_irqs=2048 --- vmlinuz --- initrd.img
```

If using a kickstart installation, add the additional kernel parameters to the PXE configuration file.

If you want to make these changes permanent, edit the `/boot/grub/grub.conf` file in your Oracle VM Server after the installation has completed.

4.1.8 Restarted Oracle VM Server is Not Rediscovered

If the NIC that connects to the storage on the master Oracle VM Server is down, the master Oracle VM Server is restarted, but Oracle VM Manager does not rediscover the Oracle VM Server. This is an intermittent issue and may not always occur.

4.1.9 Wake On Lan (WOL) Fails if Oracle VM Servers on Different Subnets

Starting or restarting Oracle VM Servers fails if the Oracle VM Servers in a server pool are on different subnets.

Workaround: Use IPMI (Intelligent Platform Management Interface) to start or restart Oracle VM Servers in a server pool that are on different subnets.

4.1.10 Remove Oracle VM Server from Server Pool Fails on Redeployed Oracle VM Manager

If Oracle VM Manager is redeployed to a new computer, you should rediscover any file servers. If you do not rediscover the file servers, and the server pool file system is on the file server, you cannot remove Oracle VM Servers from the server pool.

4.1.11 Unable to Rediscover Server Pool after Database Clean

If you have server pools in your environment and you clear the Oracle VM Manager database, you cannot rediscover and rebuild your previous Oracle VM environment. The following error is in the job:

```
OVMRU_000021E Cannot perform operation on pool: Unknown pool found for discovered Pool FS. The pool does not have a Virtual IP Address.
```

Workaround: Follow these steps to rediscover the server pools:

1. Discover one Oracle VM Server from the server pool.
2. Register, and refresh your storage server.
3. Refresh the file system that contains the server pool file system.
4. Refresh the file systems that contains the repositories.
5. Refresh the repositories.
6. Refresh all Oracle VM Servers in the pool to discover the virtual machines.

4.1.12 I/O-intensive Storage Operations Disrupt Cluster Heartbeat

The OCFS2 heartbeating function can be disturbed by I/O-intensive operations on the same physical storage. For example: importing a template or cloning a VM in a storage repository on the same NFS server where the server pool file system resides may cause a time-out in the heartbeat communication, which in turn leads to server fencing and reboot.

Workaround: To avoid unwanted rebooting, it is recommended that you choose a server pool file system location with sufficient and stable I/O bandwidth. Place server pool file systems on a separate NFS server or use a small LUN, if possible.

4.1.13 Unable to Remove Server from Cluster: Heartbeat Region Still Active

If OCFS2 file systems are still mounted on an Oracle VM Server you want to remove from a cluster, the remove operation may fail. This is due to the fact that the OCFS2 mount is an active pool file system or storage repository.

Workaround: If a storage repository is still presented, unmount it from the Oracle VM Server before attempting to remove the server from the cluster. If a pool file system is causing the remove operation to fail, other processes might be working on the pool file system during the unmount. Try removing the server at a later time.

4.1.14 Unable to Remove Server from Cluster: Heartbeat in Configured Mode

An Oracle VM Server is in *heartbeat configured* mode if the server pool file system is not mounted. Either the file system failed to mount or the mount was lost because of hardware issues such as unavailability of the LUN of NFS server containing the file system to be mounted.

Workaround: Mount the file system through the Oracle VM Agent API, or, as a last resort, reboot the Oracle VM Server and allow it to join the cluster automatically at boot time.

4.1.15 Long Running xm Commands

Executing long running xm commands such as `xm dump-core` may slow down other xm commands until the long running xm command completes.

4.1.16 Rediscovering Oracle VM Servers Throws Cluster Error

During Oracle VM Servers rediscovery, the following error may occur:

```
om.oracle.ovm.mgr.api.exception.FailedOperationException: OVMAPI_4010E
Attempt to send command: discover_cluster to server: ip_address failed.
OVMAPI_4004E Server Failed Command: discover_cluster , Status:
org.apache.xmlrpc.XmlRpcException: exceptions.Exception:discover_cluster
already in progress
```

This may occur if you rediscover the master Oracle VM Server, then rediscover another Oracle VM Server without the master role. This occurs on an NFS-based server pool file system.

4.1.17 Netconsole Error During Oracle VM Server Startup, *Unknown Error 524*

To use netconsole you must specify a non-bridged ethx device, in the /etc/sysconfig/netconsole file on an Oracle VM Server, for example:

```
# The ethernet device to send console messages out of (only set this if it
# can't be automatically determined)
# DEV=
DEV=eth2
```

4.1.18 Invalid GPG Key for Yum Repository Accepted

If you enter an invalid prefix for the GPG Key when adding a Yum repository in the Server Update Management (YUM) dialog box, no error is displayed in Oracle VM Manager. The Yum repository is incorrectly configured, so no updates can be performed.

4.1.19 ACPI Buffer Error After Installing Oracle VM Server

On some Intel-based systems, the following error may occur after installing Oracle VM Server when the computer is started:

```
[ 0.674742] ACPI Error: Field [CPB3] at 96 exceeds Buffer [NULL] size 64 (bits)
(20090903/dsopcode-596)
[ 0.675167] ACPI Error (psparse-0537): Method parse/execution failed
[\_SB\_OSC] (Node ffff88002e4fba50), AE_AML_BUFFER_LIMIT
```

This has been observed on systems with the following BIOS information, but may also occur in other BIOS versions:

```
Vendor: Intel Corp.
Version: S5500.86B.01.00.0036-191.061320091126
Release Date: 06/13/2009
BIOS Revision: 17.18
Firmware Revision: 0.0

HP ProLiant BL685c G6
HP BIOS A17 12/09/2009
Backup Version 12/01/2008
Bootblock 10/02/2008
```

This error can safely be ignored.

4.1.20 Cisco Blade Servers Must be Configured with Fixed UUID

For Cisco Blade servers, you should use a fixed UUID. To configure a fixed UUID, see:

http://www.cisco.com/en/US/docs/unified_computing/ucs/sw/gui/config/guide/1.3.1/UCSM_GUI_Configuration_Guide_1_3_1_chapter26.html#task_6026472137893749620

4.2 Virtual Machines

This section contains the known issues and workarounds related to virtual machines.

4.2.1 selinux Disabled in PVM virtual machine with Same Kernel as dom0

If a PVM virtual machine kernel is updated to that of the dom0 kernel (for example, the 2.6.32.21-32xen kernel), the virtual machine boots with selinux disabled.

Workaround: To enable selinux, add `selinux=1` to the kernel line in the `/boot/grub/grub.conf` file.

4.2.2 Editing Virtual Machine Configuration File Not Supported

Editing a virtual machine configuration file manually is not supported. For example, if you edit the HA setting in the `vm.cfg` to disable HA, and the virtual machine is stopped by any method other than using Oracle VM Manager, the virtual machine is restarted. Oracle VM Manager is not aware of the HA change in the virtual machine's configuration file.

4.2.3 Concurrent Template Operations May Fail Due to Lock Issue

When importing and deleting several templates concurrently, or when an Oracle VM Server is removed during the import of a template, a lock exception error may appear. However, the template upload often completes successfully despite the error message, but it does not appear in the list of available templates in the storage repository.

To resolve this problem, refreshing the storage repository is often sufficient, after which the uploaded template file appears in the list. In some cases the imported template turns out to be incomplete. In that case, you should delete the template and import the template again.

4.2.4 Virtual Machine Status Stuck *In Progress*

Starting a PVM virtual machine using PXE type boot with an invalid network URL causes the virtual machine status to be *in progress* indefinitely.

Workaround: Abort the virtual machine start job. Edit the virtual machine and provide the correct URL.

4.2.5 Virtual Machine Created with Network (PXE) Installation Does Proceed Beyond Pre Boot

Creating a virtual machine using the Network method (PXE) does not proceed beyond pre boot, so the virtual machine is not created. This occurs for Oracle Linux 5.x virtual machines.

4.2.6 Hardware Requirements for Hardware Virtualized Guests

Creating hardware virtualized guests requires the Oracle VM Server has an Intel-VT (code named as Vanderpool) or AMD-V (code named as Pacifica) CPU. See the *Oracle VM Installation and Upgrade Guide* for a list of supported hardware.

4.2.7 Accessing a Virtual Machine Console

Oracle VM Manager requires a VNC browser plug-in to enable remote access to the virtual machine (guest) consoles.

Download `tightvnc-java-1.3.9-3.noarch.rpm` and install it on the Oracle VM Manager host. You can download TightVNC from:

<http://oss.oracle.com/oraclevm/manager/RPMS>

4.2.8 Restart Required to Support Decreasing Memory

For both hardware virtualized, and paravirtualized guests, any new memory setting must be less than or equal to the maximum available memory. For hardware virtualized guests, increasing or decreasing the memory requires a restart of the guest. For paravirtualized guests, no restart is required.

4.2.9 Changing Number of Virtual CPUs Not Supported for PVHVM Guests

For hardware virtualized guests with paravirtualized drivers (PVHVM) changing the number of virtual CPUs is not supported. The guest will continue to display the virtual CPUs as originally defined.

4.2.10 Poor Mouse Pointer Control in Virtual Machine Console

When you launch the virtual machine console from Oracle VM Manager you may experience that the mouse pointer on your local machine and the mouse pointer in the virtual machine travel across the screen at different speeds.

If your guest virtual machine's operating system is Linux-based, the following workaround may reduce the poor mouse control. Enter the following on the guest's command line:

```
# xset m 1 1
```

4.2.11 Windows Server 2008 R2 x64 HVM Guests Do Not Cleanly Shut Down

Windows Server 2008 Release 2 64-bit hardware virtualized guests fail to shut down cleanly. After the guest has been shut down, and started again, Windows reports that it was not shut down cleanly.

This is not an issue for Windows Server 2008 Release 2 32-bit hardware virtualized guests with paravirtualized drivers (PVHVM).

4.2.12 New Disks Displayed with Yellow Icon in Windows Guests

When you add a new disk to a virtual machine and refresh the device manager, the new disk is displayed with a yellow mark. This occurs in Microsoft Windows guests that have the Oracle VM Windows Paravirtual Drivers for Microsoft Windows Release 2.0.7 installed.

4.2.13 New Disks Are Not Automatically Detected in Windows 2008 Guests

When you add a new disk to a virtual machine, the new disk is not automatically detected. This occurs in Microsoft Windows 2008 Release 2, 64-bit guests that have the Oracle VM Windows Paravirtual Drivers for Microsoft Windows Release 2.0.7 installed.

Workaround: After you add a new disk, scan for new hardware changes using **Server Manager > Disk Drives > Scan for hardware changes**.

4.2.14 Virtual Machine Utilization Over 100%

When you create a virtual machine, you select the Processor Cap as a percentage, between 10 and 100%. The default is 100%. This value is then converted to a CPU utilization limit in the vm.cfg for the virtual machine. The value set in the vm.cfg limits the amount of CPU a guest is allowed to consume. The number of virtual CPUs set for the virtual machine is a factor when calculating the value for the vm.cfg file.

If the Processor Cap is set at 100% in Oracle VM Manager, the value set in vm.cfg is 0, which means there is no limit to CPU utilization. If the Processor CAP is set between 10% and < 100%, the value in the vm.cfg file is calculated as follows:

$$\text{value} = \text{Processor_Cap (set in UI)} * \text{Number_Virtual_CPUs}$$

This calculation can yield values greater than 100. Inversely, if importing a virtual machine or template, a value of 0 in the vm.cfg file translates to Processor Cap of 100% in the UI. Any other value in vm.cfg is converted to a Processor Cap percentage using this formula:

$$\text{Processor_Cap (in UI)} = \min(100, \text{value_in_vm.cfg} / \text{number_virtual_cpus})$$

4.3 Networks

This section contains the known issues and workarounds related to networks and networking.

4.3.1 Network Card Limit in Virtual Machines

Oracle VM Manager supports eight network cards for each HVM virtual machine as outlined in [Table 5, "Virtual machine maximums"](#). However, the system library does not allow users to add more than *three* network cards when creating a virtual machine from installation media.

Workaround: After the virtual machine is created, add up to *five* new network cards by editing the virtual machine in Oracle VM Manager.

4.3.2 ARP Packet Checksum Errors

VLANs over bond mode 6 (balance-alb) bridge interface are not supported as this mode is incompatible with VLAN bridge interfaces.

Workaround: There are two workarounds for this problem:

- Use bond mode 6 as a bridge interface; do not use VLANs over bond mode 6.
- Use VLANs over bond modes (1=active-backup or 4=802.3ad) as a bridge interface.

4.3.3 Bond Interface is Down in Oracle VM Manager

A bonded interface may be shown as Down in the Oracle VM Manager UI, even though it is up.

4.3.4 Failed Vlan Creation Job Does Not Rollback Job

If a job to create a Vlan fails, the job is not rolled back and the Vlan is created in an inconsistent state and cannot be deleted.

4.3.5 Changing Cluster Heartbeat Network Does Not Reflect New IP Address

If you move the Cluster Heartbeat network role to another network, with a different IP address, the change is not reflected in the Oracle VM Servers.

Workaround: Edit the /etc/ocfs2/cluster.conf file on each Oracle VM Server in the network to reflect the new IP address, and restart each Oracle VM Server.

4.3.6 Bridge Not Created on Discovered Oracle VM Server

If the management network contains the Virtual Machine network role, and you discover an Oracle VM Server, the network bridge is not created on the newly

discovered Oracle VM Server. This results in virtual machines not being able to start on the newly discovered Oracle VM Server, and the following job error:

```
Device 0 (vif) could not be connected. Could not find bridge device ip_address
```

Workaround: Remove the Virtual Machine network role from the management network, then add the Virtual Machine network role again to the network. The bridge is created on newly discovered Oracle VM Server.

4.3.7 Virtual Machine Networking Hangs With Default Enabled TPA for BNX2X Network Driver

If you have the default setting for TPA in the bnx2x network driver on an Oracle VM Server, you may see very low network throughput and possible network hangs when accessing an NFS-based file server from a virtual machine. The `/var/log/messages` file on the Oracle VM Server contains many messages similar to the following:

```
bond0: received packets
cannot be forwarded while LRO is enabled
bond0: received packets
cannot be forwarded while LRO is enabled
__ratelimit: 4 callbacks
suppressed
```

Workaround: Disable TPA for the bnx2x network driver by modifying the `modprobe.conf` file on the Oracle VM Server to change the bnx2x driver settings to `options bnx2x disable_tpa=1`.

4.4 Storage

This section contains the known issues and workarounds related to storage.

4.4.1 Unclean File System Causes Errors When Used as a Server Pool File System

If a server pool file system is not clean (contains existing files and server pool cluster information) and used to create a server pool, a number of errors may occur.

- A server pool is created when the file system is discovered named *Unknown pool found for discovered Pool FS*. The server pool cannot be edited or used. The following error is displayed:

```
OVMRU_002037E repository_name - Cannot present the Repository to server:
server_name. Both server and repository need to be in the same cluster.
```

- Cannot create a server pool using the file system. The following error is displayed:

```
OVMAPI_4010E Attempt to send command: create_pool_filesystem to server: server_
name failed. OVMAPI_4004E Server Failed Command: create_pool_filesystem ... No
such file or directory
```

- Cannot delete a server pool file system using the Physical Disks tab in the Hardware view. The following error is displayed:

```
"VALUEERROR: UNKNOWN ERROR: 'BACKING_DEVICE'"
```

- An OCFS2-based storage repository becomes orphaned (the clusterId that was used when the OCFS2 file system was created no longer exists), you cannot mount or refresh the repository, and the following error is displayed:

```
"OVMRU_002037E Cannot present the Repository to server: server_name. Both
```

server and repository need to be in the same cluster."

Workaround: Clean the file system of all files before it is used as a server pool file system.

4.4.2 Storage Repository File Size Not Up-To-Date

Adding and removing files from a storage repository does not affect the total size of the storage repository. For example, when you delete a virtual disk file from the storage repository, the repository size does not change to reflect the reduced file size, and when you add ISO files to the storage repository, the repository size does not change to reflect the increased size.

4.4.3 Resize of a LUN Does Not Display in Oracle VM Manager

When resizing a LUN in a storage array in Oracle VM Manager, the change is not shown in the user interface.

Workaround: Select the storage array and click Refresh twice. The changes are reflected correctly in the user interface.

4.4.4 Rescanning a LUN Does Not Show the New Size of a Resized LUN

When you resize a LUN and rescan the physical disks on the storage array, the new size is not reflected in the Oracle VM Manager UI in the Physical Disks tab in the Hardware view.

4.4.5 Booting from Multipath SAN Is Not Supported

Oracle VM has multipath storage access enabled by default, and also supports booting from a SAN in single-path configuration. However, booting from a multipath SAN is not supported in Oracle VM Release 3.0.2. This feature is currently being worked on.

Workaround: If you need your servers to boot from SAN, configure storage access with a single physical path. Make the necessary adjustments to enable booting from SAN: set the BIOS to use the host bus adapter as a boot device, and so on. The disk must appear in the installer as an *sd[x]* device, not as an *mpath[x]* device.

4.4.6 Blacklisting of System Disks for Multipathing Fails

In Oracle VM, system disks of Oracle VM Servers are automatically blacklisted in the default multipath configuration. However, in some installations the system disks are not added correctly to the `/etc/blacklisted.wwids` file. The problem is caused by a mismatch between the disk ID listed in the device mapper and the ID used by the installer.

Even if the blacklisting of system disks fails, Oracle VM functionality is not impacted, since the disks in question are not multipathed and therefore cannot be assigned to VMs in Oracle VM Manager.

Workaround: To correct the blacklisting configuration, manually update the `/etc/blacklisted.wwids` file after installation. If you choose to do so, replace the disk ID listed with its correct SCSI ID. You can retrieve the SCSI ID with this command:
`scsi_id -gus /block/sd[x]`.

4.4.7 Blacklisting of System Disks for Multipathing Fails on HP Smart Array (CCISS) Disk Devices

Installing Oracle VM Server on an HP Smart Array (CCISS) fails to blacklist system disks (they are not included in the `/etc/blacklisted.wwid` file). Messages similar to the following are logged in the `/var/log/messages` file:

```
multipathd: /sbin/scsi_id exited with 1
last message repeated 3 times
```

Workaround: Configure multipathing to blacklist the CCISS system devices by adding a new line to the `multipath.conf` file:

```
# List of device names to discard as not multipath candidates
#
## IMPORTANT for OVS do not remove the black listed devices.
blacklist {
    devnode "^(ram|raw|loop|fd|md|dm-|sr|scd|st|nbd) [0-9]*"
    devnode "^hd[a-z] [0-9]*"
    devnode "^etherd"
+   devnode "^cciss!c[0-9]d[0-9]*" <<====
    %include "/etc/blacklisted.wwid"
}
```

4.4.8 Multi-homed NFS Shares Are Not Supported

When an NFS file server has two IP addresses, it cannot expose the same file system over both interfaces. This situation would occur if you configure both IP addresses as separate access hosts; for example to provide access to different Oracle VM Servers via different paths. As a result, the same file system would correspond with two different storage object entries, each with a different path related to each of the IP addresses. As a storage server can only be represented by one object, this configuration is not supported in Oracle VM Release 3.0.2.

Workaround: Configure only one access host per storage server.

4.4.9 Unable to Delete a Non-Empty Storage Repository

If a storage repository is not empty and contains files such as ISO files, templates, or virtual machine files, you cannot delete the repository.

Workaround: You must first remove all files from the repository, then delete it.

4.4.10 Refreshing a NAS-based File System Produces Invalid/Overlapping Exports

When a NAS-based file system is refreshed, it may produce invalid or overlapping exports. During a file system refresh job, all mount points defined in the NAS-based file server's exports file are refreshed, even file systems that are not intended to be used in Oracle VM environments.

Top level directories which also contain subdirectories in the exports file may also cause problems, for example, if an export file contains `/xyz` as an export location, and also contains `/xyz/abc`. In this case, the following error may be displayed during a refresh file system job:

```
OVMRU_002024E Cannot perform operation. File Server: server_name, has invalid exports.
```

Workaround: For the second issue, to work around this problem, do not export top level file systems in the NAS-based file server's exports file.

4.4.11 Expanding the Storage Array folder in the Navigation Pane Causes UI Hang

If you click on the Storage Array folder in the Storage tab of the Hardware view while a discovery job is in progress that involves discovering storage array objects, the Oracle VM Manager UI hangs. For example, if you discover an Oracle VM Server which has storage connected to it, then click Hardware > Storage and select the Storage Array folder, the UI hangs.

Workaround: Wait until all storage discovery jobs are complete before expanding the Storage Array folder.

4.4.12 Creating Sparse Files Using the dd Command

When using the dd command to copy a sparse file residing in an OCFS2 file system, use the `conv=sparse` parameter and specify a block size for the operation which is equal to or greater than the cluster size of the OCFS2 file system. For example:

```
dd bs=1024K conv=sparse if=test_file1 of=test_file2
```

By default, the dd command uses the file system block size rather than the cluster size. If the block size specified is smaller than the file system cluster size, the target of the dd operation will not be created as a sparse file. Use the `tunefs.ocfs2` command to display the cluster size for the OCFS2 file system.

4.4.13 Dom0 Memory Requires 350 MB of Memory per 100 LUNs

For every 100 LUNs on an iSCSI target, you should allocate at least 350MB of Dom0 memory. For example, to support 1,000 LUNs, you should allocate at least of 4GB memory to Dom0.

5 Upgrading Oracle VM

Oracle VM Release 3.0 is not backwardly compatible with previous Oracle VM releases. If you are using Oracle VM Release 2.x you cannot upgrade to Release 3.0.2. You must reinstall your Oracle VM Servers and Oracle VM Manager. You can however upgrade between Oracle VM 3.x releases, for example, upgrading from Oracle VM Release 3.0.1 to 3.0.2. See the *Oracle VM Installation and Upgrade Guide* for information on upgrading between Oracle VM 3.0 releases.

6 Documentation Accessibility

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